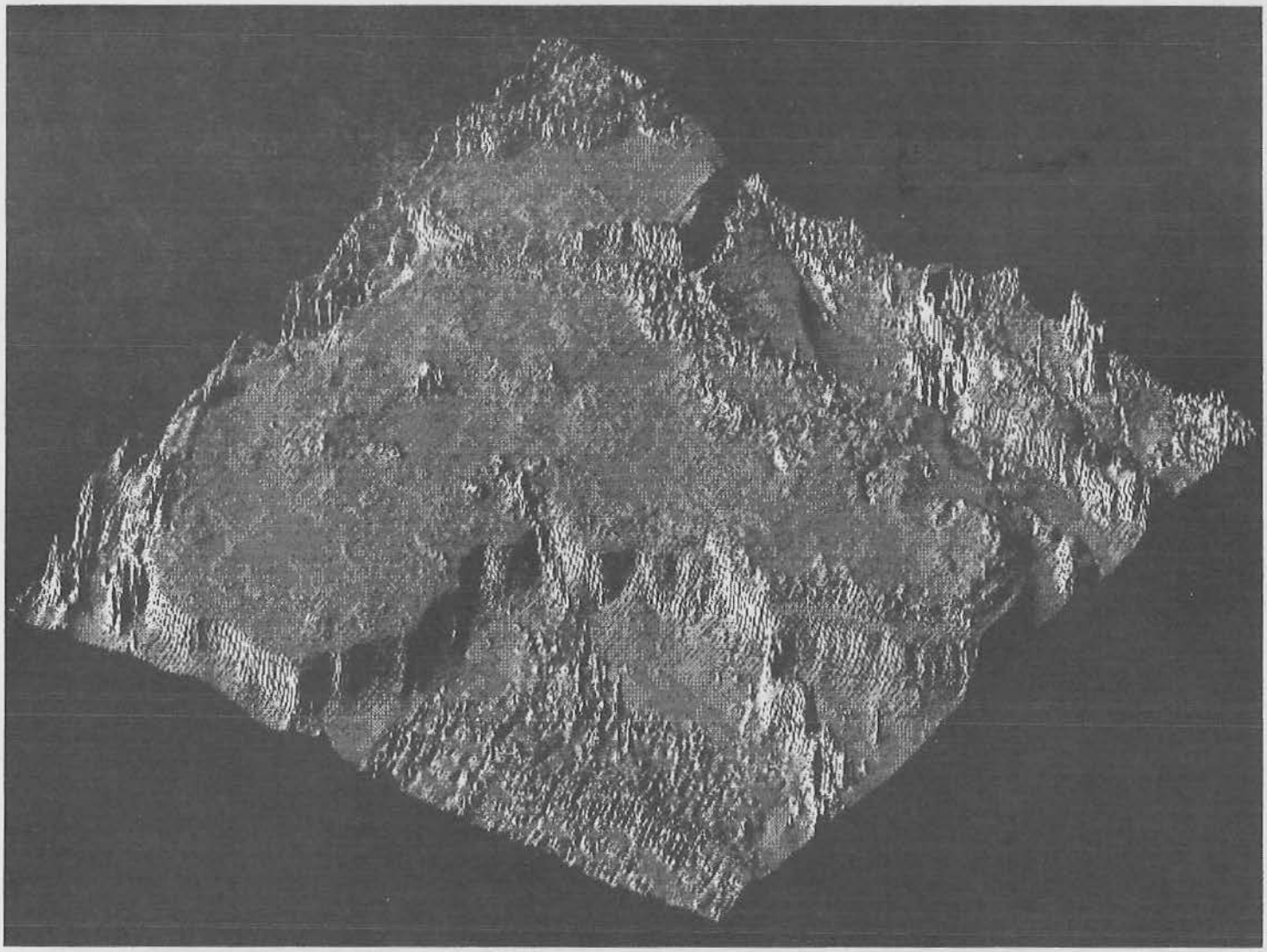
CARTOUCHE

The operational publication of the Canadian Cartographic Association
Revue de l'Association canadienne de cartographie



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CARTOUCHE

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In this issue/ Dans ce numéro .....

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Cartouche is produced quarterly by the Canadian Cartographic Association.
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You are welcome (urged!) to submit items to be considered for publication. It is the current policy of the editor to provide dual language copy for editorial content and journal mechanics. All other articles appear in language of submission. While every effort is made to ensure accuracy of content, the editor (*like all cartographers!*) cannot be responsible for errors in compilation, or loss of any item submitted. Opinions expressed in the editorials and submitted articles and letters are not necessarily those of the Canadian Cartographic Association. For advertising policy, please contact the Manager, Roger Wheate.

Cartouche est publié trimestriellement par l'Asssociation canadienne de cartographie.
Les dates limites pour l'envoi d'articles ou de documents sont les suivantes: 31 janvier, 30 avril, 30 juillet, 31 octobre (*voir page 23*).

N'hésitez pas à soumettre des articles (vous êtes même priés de le faire!) que vous désirez publier dans le bulletin. Présentement, selon la politique en vigueur, l'éditeur doit publier en français et en anglais, l'éditorial ainsi que la description du processus de publication du bulletin. Le reste des articles paraîtront dans la langue dans laquelle ils ont été écrits. Bien que beaucoup d'efforts sont déployés en vue d'éviter de tels problèmes, l'éditeur (*de même que les cartographes!*) ne seront pas tenus responsables des erreurs de compilation ou de la perte d'articles qui leur seront soumis. Les opinions exprimées dans le cadre des éditoriaux, des articles et des lettres publiées dans le bulletin ne reflètent pas nécessairement celles de l'A.C.C.. Pour ce qui est des tarifs publicitaires, veuillez contacter le responsable de la publicité, Roger Wheate.

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Our Cover: Africa. Photographic reduction of analytical relief shading image taken from Idrisi 3.2. (*courtesy, Lee Thomson*)
Also: an apology to the ACLMA for failing to acknowledge the cover of *Cartouche #2* which came from their facsimile collection, generously provided to the CCA.

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L' Association canadienne de cartographie

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News/Nouvelles

New Executive Elected!

The votes are in and counted, and the winners announced. At the recent AGM in St. Catharine's, 1990 CCA President *Claudette Leblanc* announced the winners of the elections for the new executive. *Majella Gauthier* of the Université du Quebec à Chicoutimi took the nod for vice-president. *Marcia Faurer* of the University of Winnipeg (as of Sept. 1991) won the position of Education SIG chair. *Roy Doyon*, who had served as interim chair of the Technology SIG, was returned to that position by the members. Both SIG Chairs are two year terms. *Peter Keller* will assume the role of President, with Claudette moving to the position of past president, replacing *Jean Carriere* who has served the CCA so well over the last three years. His monetary omnipotence, *Gary McManus* was the only candidate for treasurer, and members at the meeting thanked Gary for his terrific work over the last two years. The members in attendance joined the current executive in thanking all those who ran for office for their willingness to support the CCA.

Members are reminded that there is now a call for nominations for Vice-President, Secretary, and the chairs of three special interest groups: Computer Mapping/automation, Map Use/Design, and History of Cartography. To ensure a smooth election, please get your nominations in quickly. See announcement later in this issue.

Congratulations to CCA award and scholarship winners.

The winners of the 1991 President's prize and the Norman Nicholson Scholarship were also announced at the AGM. Taking the map awards were:

Monochrome:	G. Edwards, SSFC
	Population Distribution, S. Ontario
Colour:	C. Melanson, COGS
	History of Russia
Journalistic:	E Redekop, UVic
	Political Violence in Central America

There was no award in the computer algorithm category.

In choosing the winner of the Nicholson scholarship, the committee had a very difficult time choosing one outright winner, and decided to divide the $500.00 award between *David Mercer* of Memorial University and *Stephen Garner* of the University of Victoria.

Please join the Executive in extending our congratulations to these students. Details of the *1992* President's Prize will be appearing soon.

The Manager's File

1: New members/membres nouveaux

David Alford,	Ottawa, ON
Bob Bruce,	Winnipeg, MAN
Gordon Deecker,	Ottawa, ON
Joseph Gladstone	Ebobicoke, ON
Val Johnson,	Victoria, BC
Walt Jones,	Nanaimo, BC
Michael Kunz,	El Paso, TX
Alec McDougall,	Calgary, AB
Pat Passmore	Guelph, ON
Andrea Sheridan,	Ottawa, ON
Michael McDermott,	St. Catharines, ON
Michael Simmons	Nepean, ON
Tina Simpson,	Markham, ON
Dale Moulton,	Carp, ON
Cynthia Delahey,	Willowdale, ON
Guang Wu,	Ottawa, ON

New corporate member:
Chefford Canada Ltd. (GIMMS), Ottawa, ON

2: Elections.

Footnote to CCA Elections 1991: A few members on their election ballots questioned whether there were no Canadians nominated for the position of technology Interest Group Chairperson. The quick answer is "No". The longer answer is that approximately 25% of our membership is based in the United States. We are very proud and privileged to have such a strong following south of the border, and greatly benefit from their input via Cartouche, Cartographica and especially at the annual meeting (*see item 3*). In the light of their participation in the Association, these members have been 'under-represented' on the executive of the CCA in the past, and we heartily welcome their future participation through those elected to the executive.

3: AGM.

It is unfortunate that more of our members are unable to attend the annual meeting, due to budget and time constraints. Most attendees who become saturated by large-scale *"all you need to know about GIS"* meetings, generally find the CCA meeting to be a most pleasant change of pace. All members are urged to try to attend the 1992 meetings in Montreal, June 2-6, 1992.

4: Introductory 6-Month Membership,

New members to the CCA may now join at a half-yearly rate of $35, for the last half of 1991. Membership will include the last two issues of Cartographica for 1991 (numbers 3 and 4), and the last two issues of Cartouche (3 and 4), and also the first issue of 1992. Members are asked to draw this offer to the attention of prospective new members.

Message from the president
message de le président

by
Peter Keller.

Once again, a new executive has been elected, and as your new president, I thought I would keep you informed of some of my thoughts and actions by writing a presidential column in Cartouche.

Where do I start? As usual, I enjoyed our annual meeting hosted by Brock University in conjunction with SUNY Buffalo. For those of you that did not make it there, you missed a few days filled with learning and fun. Alun and his team put together a stimulating program, with excellent sessions and workshops. The hospitality from Brock University was superb; going all out to even raise the dead to teach us about the history of Niagara and the Welland Canal. Thanks to all speakers and workshop organizers, and special thanks to Alun and his teams at Brock and SUNY Buffalo for a tremendous effort.

The one thing I always like about the CCA conference is its size. I am tired of Cartography, GIS and Geography conventions where thousands of people flock together to race from concurrent session to concurrent session, listening to speakers that are given 15 minutes to present years of work, and listening to vendors flogging the strength of their products with no time for discussion or comment from the audience. Yes, you get to see a lot of people at these conventions, and you get exposed to a lot of material and glitz; but I find that you can't beat a conference the size and form of the CCA's annual meeting to get to know other delegates with an interest in your field, and to listen to and to discuss initiatives and research ideas of interest to you in some detail. If you have never attended a CCA meeting, try it by joining us next year in Montreal. I am sure you will enjoy it.

A note of appreciation and thanks to Claudette LeBlanc and Jean Carriere for their work and effort as last years president and past president respectively, to Garry McManus for agreeing to be treasurer for another term, and to Roy Doyon and Brian Klinkenberg for their time spent as chairs of the technology and the education interest speciality group respectively. A welcome to Majella Gauthier as new vice president to the Association, to Roy Doyon who made it back as chair of the technology speciality group for another term, and to Marcia Faurer as new chair of the education interest group. And of course, there is Roger. A note of thanks to Roger Wheate for agreeing to stay on as manager for another year despite all the workload.

The latest thing in Canada appears to be to put together national fact finding missions. Recently I attended one put together by GIAC, the Geomatics Industry Association of Canada. The goal of this fact finding mission was to elicit information about the status of Canada's geomatics initiatives, and to study human resource needs. I was aghast to discover that a number of participants at this meeting agreed that maps were a thing of the past. The future planners and decision makers working for government and private industry, we were informed, would no longer look at maps - they would look at spreadsheets. We would still need system analysts, computer scientists and application specialists to manage land based data, we were told, and perhaps we will continue to need surveyors. As for cartographers - well....

Let me continue with this subject a little. The keynote speaker at our conference this year was Mike Dobson, Vice President Creative Services (a fancy name for Chief Cartographer) of Rand McNally. The thing that I most clearly remember from his address were his comments on the status and role of cartographers and cartography in present society - doom and gloom with some optimism. We were told that, no doubt, cartography is needed in the information age, but that society thinks it can do without cartographers. After all, we will soon have reached the point where anybody can press buttons on a keyboard or click a mouse to draw pretty maps on a computer screen. That was the doom and gloom part. Optimism we learned can be derived from the fact that we, the cartographers, know better. Achieving excellence when attempting to communicate the spatial distribution of phenomena on the surface of the earth, or when attempting to highlight relationships between spatial distributions, does not happen by clicking a mouse. It also does not happen by jumping on technology bandwagons. It happens by learning and practicing cartography.

The bottom line! It is true, we do know better! And contrary to some mumbling I hear occasionally, that to remain prestigious and accepted as professionals, we should call ourselves anything but cartographers, we should simply continue to advance excellence in our field, and proudly call it by its proper name.

Enough naval gazing for today, I may get back to the issue in the future. In the meantime, I hope that you have had a good summer. Did you happen to use a map on your vacation? Was there anything you disliked or liked about the map that we should know about? Why not sit down, write about it, and mail it to the editor of Cartouche.

Until the next Cartouche.

Technology
technologie

by
Roy Doyon

Technological innovations continue at a rapid pace and keeping abreast of those that affect our craft (read also science and art) is both a challenge and a continuing source of pleasure. I'll cover but a few new and some older products you may find of interest.

Throw away those pesky red light filters in your darkrooms! Anitec's new Topaz CAM-4 camera speed ortho film is a yellow and amber filter compatible line and halftone film. Now you only need one filter for most applications. Topaz CAM-4 works with Anitec's Reprodot developer, the same as used with their bright light duplicating contacting film (HVH-D and HVH-C), and their bright light contact paper (HVH-P).
Anitec: U.S.: 800-336-6013 FAX: (201) 670-2899;
Canada: (416)940-4455 FAX: (416) 497-4249.

Another useful recent development is Caprock's CO contact (i.e. halftone) screen which permits you to make high quality (good tonal range and contrast) black and white halftones from color originals using ortho rather than panchromatic film. Panchromatic film had to be handled and developed in complete darkness so it was cumbersome especially for student use. The CO screen can facilitate the production of photo maps from colored positive or transparency aerial photos or from Landsat or SPOT imagery. Caprock Developments, Inc. (1-800-222-0325) manufactures a complete line of tint and contact screens. They also will, upon request, send you some of their informative product literature which explains the differences between various screen types. If you want to know the differences and specific applications of square, round or elliptical dot screens ask for some of Caprock's literature, they make good student handouts.

If you are making halftones and would like to produce good consistent duotones, call Policrom Screens (800-321-2338) and ask about their Politone System Screen kit. The kit facilitates duotone production by eliminating difficult bump exposures and comes with three contact screens which allow the production of conventional halftones, "minicolor" duotones, and "maxicolor" duotones. The 12" X 15" (28 X 38 cm) screen set lists for about $150 (U.S.).

While we're on the topic of screens I would be remiss not to remind educators of a free brochure from DuPont entitled DuPont Handbooks and Production Aids for Educators and Craftspeople. It describes useful and inexpensive booklets and quality control devices useful in production cartography classes. I especially recommend their Film Contacting for the Graphic Arts, which costs less than $5.00 (U.S.) and covers all aspects of film contacting including equipment, exposure, evaluation procedures, spreads and chokes, and wet and dry dot etching. This 76 page booklet deserves a spot on your reference shelf and could easily serve as a supplementary text. Send enquiries to: E.I. duPont de-Nemours & Co., Graphic Communications Division, Graphic Center (A15940), Wilmington, DE 19898.

With the proliferation of desktop mapping and the ability to create prescreened color separation negatives, color specification and quality control are increasingly important. Color proofing can be a problem when interpolating a color monitor's RGB additive color to the printer's process color (YMCK) subtractive system. Systems for intermediate proofing prior to film production for desktop mapping are starting to appear on the market, although high-end (i.e. very expensive) systems (ex: Kodak's Designmaster) have been available for a number of years. Color ink jet printers provide an inexpensive albeit crude method of proofing when a hard copy is necessary. Pantone has cooperated with a number of software manufactures (QuarkXPress, PageMaker, Illustrator, CorelDraw, etc.) to develop color specification capabilities. Radius, a color monitor manufacturer, has cooperated with Pantone to develop the Pantone ColorToolkit software which provides a standard method to implement color on the MacIntosh.

Whether you're matching colors on color monitors or picking colors for maps the traditional way you may be interested in two new color matching systems. The TRUMATCH Colorfinder is a computer generated color guide displaying 2000 colors, all of which can be duplicated using standard process colors using screen tints in 5 percent intervals. The color guide is a fan type guide and lists for $85.00 (U.S.). TRUMATCH (NYC: 212-351-2360) also markets a TRUMATCH software package for PC or MacIntosh. Pantone (201-935-5500) also has developed an improved Process Color System Guide which displays 3000 colors achievable in process color and is SWOP compatible. Some of their tints, however, necessitate using the older code tint screens (one-half A to M) although they say that no 1 or 2 % screens are necessary. The guide would have been a bit more useful if they could have identified those tints that equate with the Pantone Color Formula Guide.

Reading hardware manufacturer's literature for their new products can often be confusing. Particularly in the case of hardware devices like digital scanners, laser printers, or ink-jet printers. Assorted manufactures often claim to have better quality (higher resolution) due to their system's ability to print or read more dots-per-inch or dpi's (in most parts of the globe they go by

dots-per-centimeter or dpc's). Keep in mind that dpi's aren't the same as screen rulings in lines per inch or whatever unit you're accustomed to. Remember, there are two types of dots-per-inch (or dots-per-cm). Dots-per-inch-*addressable* (dpia) is the resolution of the imaging system's hardware (typically a laser or LED), as it records to a receiving surface. This is generally the dpi described by the system's manufacturer. A more meaningful measure is the dots-per-inch-*resolvable* (dpir), which is the actual visual resolution as measured with an optical device. There are a number of variables that influence dpir including the type of receiving surface. Regardless, the dpir is usually, if not always, substantially lower than the dpia. A rough equivalent is a screen ruling of 50 lines per inch (20 lines per cm) equals 300 dpi (120 dpc) digital.

Speaking of screen resolution, anyone using early versions of PageMaker and especially QuarkXPress may encounter moiré problems when outputting color separations on Linotronic or Agfa imagesetters. This issue was discussed in a recent issue of the *Graphic Arts Monthly* (6/91) and is related to problems in the early PostScript RIPs (raster image processor) which resulted in incompatible screen angle alignment. The most recent version of PostScript, however, has resolved this problem. You may wish to output a sample page to evaluate if your software has any problems. The problem been resolved and some imagesetter manufacturers (*Linotype-Hell and AgfaCompugraphic*) have developed PostScript enhancements which increase output quality to the level of high-end imagesetters.

A recent issue of *Graphics Arts Monthly* (5/91) concluded a three-part software review of Adobe's Illustrator Version 3.0 with a discussion of several color specification and quality control issues. Topics included calibration of the color monitor to match either SWOP or the designer's individual printer's or service bureau's standard process colors. Other issues discussed included color trap, chokes and spreads and bleed specifications. These are issues desktop mappers need to be aware of while creating their digital color separation files. Many of the techniques and considerations learned in conventional production courses reappear in digital mapping. Students who think they can skip over production concepts and go straight to computer graphics to produce plate ready negatives could be in for some expensive surprises. A solid background in production concepts will facilitate the transition to desktop mapping.

Within the printing industry some interesting changes have taken place. Traditional typesetting bureaus, due to the competitive pressures of desktop publishing and thanks to moderately priced PostScript driven imagesetters, are now routinely producing color separation negatives. Cartographers producing thematic atlases can now take advantage of this technology to produce maps or atlases at substantial savings in prepress costs. Two additional trends will lessen the costs of map production. Larger format PostScript imagesetters are becoming available and linkages to higher end imagesetters will lessen our traditional reliance on the darkroom. For now, however, keep in mind that a service bureau that links to a Scitex or other high end imagesetter is charging you at a higher rate than if the file is output to a Linotronic imagesetter. The hourly rate on a Scitex is routinely billed between two to six hundred dollars (U.S.). Sufficient incentive to institute an aggressive quality control program prior to sending your digital files out to be printed.

Another innovation that can save costs for atlas producers is occurring in the area of electronic page imposition software. Ultimate's Film$aver software automatically groups PostScript pages into a variety of imposition schemes which could save you considerable make-ready time and money at the printers. The software lists for $995 (U.S.) and is available for either PC or MacIntosh. Call 1-800-363-3590 for details.

Fonts are everywhere. On disk, on CD-Rom, and an abundant choice of fonts in most graphic arts software. Choices for typeface selection for desktop mapping are almost overwhelming. And the situation is made more confusing due to the fact that typeface designs can not be copyrighted. Typeface names, however, can be protected by trademark. Bitstream's Swiss, for example is Helvetica and their Zurich is Univers. Desktop cartographers, particularly those doing atlases, have many font choices and with so many choices guidance to prevent the misuse of type would be helpful. Not to worry, for with the advent of desktop publishing, our colleagues, the typographers, recognizing the danger in the proliferation of fonts and the frightening potential for font abuse have written a number of instructive how-to books. I recommend Daniel Will-Harris's *TYPESTYLE*. With sparkling wit and clarity Harris has written a superb guide on selecting and using type. The book includes a very useful chapter on "Matchmaking," fonts that work together. And for folks that don't have a lot of time to read he included a chapter entitled "basic training" in which he summarizes all the basic rules on the intelligent use of type. Harris also has written lucid and humorous guides to using WordPerfect and Ventura. Check the computer section of your favorite bookstore and expect to pay 24.95 $US.

If you hear of good production ideas, please share them through this colomn. See page 3 for my contact information. Thanks.

History of Cartography
histoire de cartographie

by
Jeff Murray

Canada's Map Treasures Down the Drain

Behind the marble and brass facade at the National Archives of Canada lies an insidious time bomb that is threatening to destroy our national memory piece by piece. The bomb is the product of neglect a neglect not of the collections but of the structure in which the collections are stored. Although the National Archives building is just 23 years old, it was never built to archival specifications and has never been properly upgraded.

Unfortunately, because of its substandard facilities and its unacceptable environmental conditions, the National Archives has suffered its fair share of disasters over the last few years. In 1987 a leak in a roof vent left some ministerial records with water damage. Another leak in 1988 covered nineteenth century documents from the Department of Militia and Defense with oily water. Even Canada's proclamation of the Constitution has been damaged. A failure in the air conditioning two years ago, when the document was on exhibition, caused it to curl in its frame.

As devastating as these disasters have been, the biggest catastrophe to ravage our national treasures so far has to be last July's deluge on Canada's largest and most valuable collection of antique maps.

The flood started in a utility area, between the fourth and fifth floors, where plumbers from Public Works had been working on a drain pipe a few days earlier. The workmen had put a temporary repair in place but cooling equipment, working in the wake of some hot weather, placed a higher than normal load on the system. The repair could not take the extra strain and burst, quickly filling the utility room. Eventually the water found its way through a crack that led into the vault where the oldest and most valuable maps are stored.

It was sheer luck that a security guard discovered the vault leak shortly after the building had closed. It was also fortunate that Ed Dahl, the archivist in charge of the collection (*and long-time CCA member*), was working late that night and could immediately begin a rescue operation.

Among the rare items Dahl was able to save was a 1760s map of Quebec commissioned by the British Governor, General James Murray. It is a hand-drawn map, and only five copies are known to exist. Also saved was a 1508 map of the world. It is the oldest original document in the National Archives relating to Canada. There are only 64 originals known in the world today. If you could find one on the market, it would probably command a price around $50,000.

Unfortunately, 24 of the oldest atlases were not so lucky. The flood damaged a 1608 edition of Mercator's *Atlas Minor* and a 1584 edition of Abraham Ortelius's *Theatrum Orbis Terrarum*. With some hesitation, Mr. Dahl estimates the current market value of all the damaged documents at $325,000. But, as Dahl is quick to point out, statements on monetary value can be somewhat misleading because they create the false impression that, with some financial backing, the documents can be replaced.

> *"It is very difficult, if not impossible, to obtain another original of a four hundred year old map, for which there are less than a hundred known copies in existence. Once these documents are gone from the Archives, they will probably never be replaced no matter how much money we have to pay for them."*

Some of the documents were only lightly damp and could be air dried. The more heavily soaked items were immediately placed in a freeze-drier. If they were allowed to stay wet, they would grow mould or mildew which would permanently stain the paper. Although most of the items can be saved, it is not possible to restore all of them to their original condition. Many of the items that were hand-coloured with water-soluble tints have been smudged irreparably; the leather bindings on most of the atlases have warped and will have to be replaced.

Commenting on the leak in *The Hill Times*, Dr. Jean-Pierre Wallot, the National Archivist, squarely placed the blame on the condition of the Wellington Street building:

> *"This shouldn't have happened. Sometimes there are acts of God you cannot prevent and you say 'that's extraordinarily bad, it's unfortunate,' like an earthquake, you can't do anything about that. But surely this building should have been better kept over the last 23 years. You cannot pinpoint a single responsibility, but the thing is we haven't taken care of our heritage buildings".*

If one were to look for the silver lining in this disaster then it would have to be last October's announcement by Treasury Board to proceed with the construction of a new $89 million home for the National Archives. The facility is to be built on a 92-acre site in downtown Gatineau, Quebec, about a fifteen minute drive from the Parliament Buildings. Construction is to begin in three years on what will be primary a conservation facility and warehouse. The building will likely be ready for occupancy by 1997. Researcher services and staff offices will be placed in the West Memorial building, across Wellington Street from the present offices of the National Archives.

Unfortunately, the new building will be about half the size requested by the National Archives. As a result, the collections will not be brought together under one roof and some of the 14 warehouses now used by the Archives in the National Capital region will have to be retained well into the next century. While the decision for a smaller building is somewhat disappointing, it still marks a milestone in the history of the National Archives. It will be the first time since the Archives was established in 1872 that it will have a building designed and constructed to meet its specifications for the protection and conservation of our national treasures.

People and Places:

Aileen Desbarats has retired from the University of Ottawa map library. Her replacement **Grace Welch** was formerly with the Carleton University Map Library, and more recently was Chief of the Interlibrary Loan Division, National Library of Canada.

Kathy Harding has resigned from the map library at Queen's University in order to pursue personal interests. Her replacement is **Shirley Harmer**, a former part-time employee of the map library.

Carolyn Gray was recently appointed as Senior Archivist, Cartographic Portfolio, Archives of Ontario. She is replacing **Vivien Cartmell** who left the position last year to work for the Oakville Public Library.

As a result of a reorganization of the acquisitions program at the Provincial Archives of Newfoundland and Labrador **Tony Murphy** was appointed Acquisitions Archivist. In addition to his duties as Cartographic Archivist, Tony will now be responsible for the acquisition of all archival records, excluding government records.

Margaret Hutchison has left her position as the cartographic archivist, Saskatchewan Archives Board, Regina Office. Margaret is the former head of the CCA's History of Cartography Interest Group. She has accepted a position with the British Columbia Archives and Records Service.

Technical Notes:

Among the special events that will be celebrated in 1992, Canadian archivists have one of their own. Next September, Montreal will be hosting the **XIIth Congress of the International Council of Archives (ICA).** The ICA Congress is being organized jointly by the National Archives of Canada, Archives nationales du Québec, and the Canadian archival community. This is an excellent opportunity for Canadian archivists to meet their colleagues in other parts of the world and discuss common issues. The Congress meets only every four years and this is the first time that it has met in Canada. For many Canadian archivists, the Montreal Congress, which is expected to attract more than 2,000 delegates from 130 countries, is the only chance they will ever have of attending an ICA meeting.

The XIIth Congress is entitled: *The Profession of the Archivist in the Information Age.* It will focus on the impact of the information age on archival work and the extent to which the profession needs to adapt to meet the demands of the new age. Congress organizers are hoping that the program will stimulate delegates into thinking about their profession and its role in society.

In order to encourage as much participation from North America as possible, Canada's two major archival associations - the Association of Canadian Archivists and the Association des archivistes du Québec - and the Society of American Archivists will hold their annual general conferences in Montreal immediately following the ICA Congress.

Anglo-American Cataloguing Rules to be Revised

The secretariat of the Anglo-American Cataloguing Committee for Cartographic Materials has started to revise its rules for cataloguing cartographic materials. As part of the revision process, the Secretariat is considering expanding the *Anglo-American Cataloguing Rules, Part 2* to include antiquarian maps and geomatic data sets. The Association of Canadian Map Libraries and Archives will be coordinating the Canadian response. For further information, users of AACR2 are invited to contact Vivien Cartmell, Support Services, Oakville Public Library, Oakville, Ontario, L6J 2Z4.

Education/éducation

by
Marcia Faurer

Having taught 1st year physical and human geography as well as cartography, I found myself comparing the instructional support facilities in both areas. Unlike cartographic references, physical geography texts are often accompanied by overhead transparencies, slide sets, instructors' manuals, disk sets of exam questions, and lab manuals. Publishers are more willing to provide support for the introductory physical and human geography courses because of the larger market. The current and growing interest in cartography, computer cartography, and GIS, as well as the visual and lab-oriented nature of those courses should, however, prompt greater support. In the hope that this would be true, I began my search for texts in these subjects. Inquiries made to the John Wiley and Sons Inc. and Oxford University Press did not reveal any new prospects. Wiley's major product is the Robinson, et.al. text and for GIS, they have MAP II a map 'processor' for the Macintosh. Oxford publishes the '*Principles of Geographic Information Systems for Land Resources Assessment*' by P. A. Burrough and '*Introduction to Urban Geographic Information Systems*' by W. Huxhold. Prentice-Hall, Inc. seems to have a more complete and growing library of texts on these topics, including: K. C. Clarke '*Analytical and Computer Cartography*', R. G. Cromley '*Digital Cartography*', J. L. Star and J. E. Estes '*Geographic Information Systems: An Introduction*', C. D. Tomlin '*Geographic Information Systems and Cartographic Modeling*', and in press, J. Tyner '*Introduction to Thematic Cartography*' (due December '91).

A lab manual for cartography is being written for Prentice-Hall by Malcolm Brown and myself (we are hoping to have it ready to be released at the same time as Tyner's book). This is a project that I have long felt was overdue. Now that we are in the thick of preparation, it is evident why it was not done earlier. What started out as a simple concept has developed into a very complicated task.

To overcome the wide variations in cartographic lab equipment for at different Universities, we will offer more than one version of each lab exercise to cover most of the possibilities. Another factor is that Prentice-Hall would like the manual to be suitable to accompany the Tyner book and their GIS and computer cartography books. So, we are also trying to tie-in these topics wherever possible. Hopefully, this manual will help to give instructors a worthwhile set of labs to work with directly or to augment their own labs already in use.

Map Use/Map Design

by
Janet Mersey

BOOK REVIEWERS NEEDED!

I have received copies of the following books for review in Cartographica. If you are interested in writing a short review (about 600 words) of one of these books, please contact me. Reviews can be written in either French or English, and should be completed within three months of receiving the book. The reviewer may keep the book they review, and will receive reprints after the review is published.

Books available for review:

Geolinguistics: Language Dynamics and Ethnolinguistic Geography,
by Roland Breton.
Softcover, 156 pages.

Canada: 25 Years in Space,
by D.H. Jelly.
Softcover, 190 pages.

Remote Sensing Yearbook 1990,
edited by A. Cracknell, L. Hayes, and H. Wei Gen.
Hardcover, 330 pages.

Accuracy of Spatial Databases,
edited by Michael Goodchild and Sucharita Gopal.
Hardcover, 290 pages.

Introductory Readings in Geographic Information Systems,
edited by Donna Peuqet and Duane Marble.
Softcover, 371 pages.

Geographic Information Systems: The Microcomputer and Modern Cartography,
edited by D. R. Fraser Taylor.
Softcover, 251 pages.

Matching the Map Projection to the Need,
by the Committee on Map Projections of the American Cartographic Association.
Softcover, 30 pages.
(See also, note below in article)

Introductory Cartography, (second edition)
by John Campbell.
Softcover, 315 pages.

(N.B. Atlases and books related to the history of cartography are handled by other book review editors. See the front pages of Cartographica for details.)

To receive a review copy of any of the above books, please contact:

Dr. Janet E. Mersey
Technical Book Review Editor for Cartographica
Department of Geography,
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Fax. (519) 837-2940
Email: Geojan@uoguelph

(Editor's. note: I suggest you hurry, they go fast!)

The Great Prolate or Oblate Debate

A recent article appearing in American Scientist recounts the fascinating story of the famous La Condamine expedition, undertaken in the 1730's by members of the French Academy of Sciences ("The Shape of the Earth", Volume 79, March-April 1991, pp. 108-110). The goal of the expedition was to measure the length of one degree of geographic latitude near the equator; a measurement which could then be compared to a corresponding degree near the poles to deduce the shape of the earth. The perils and setbacks faced by these early surveyors on their mission make for some very interesting reading. The brief article is by J. Donald Fernie, professor of astronomy at the University of Toronto.

New Map Projection Booklet Available

The American Congress on Surveying and Mapping (ACSM) has recently published a 30-page booklet entitled "*Matching the Map Projection to the Need*". The third in a series, it was prepared under the auspices of the Committee on Map Projections of the American Cartographic Association, a member organization of the ACSM. The booklet addresses way in which map projections can help make clear various geographic relationships and objectives, whether for technical or popular presentations.

The text is nonmathmatical, and more than 70 illustrations show numerous projections for world and regional maps. Edited by Arthur H. Robinson and John P. Snyder, 12 two-page chapters by 10 leading cartographers are included in an 8.5 X 11 inch format. Common and rare map projections are used for a variety of different purposes, such as displaying continental drift, viewing the Earth from space, showing routes for globe circlers, and enlarging the heart of a map.

Copies may be obtained from ACSM at a cost of 15.00 $US for members and students, and 20.00 $US for nonmembers. Phone (301)493-0200, FAX (301)493-8245

CALL FOR NOMINATIONS

Elections will be held in the Spring of 1992, with the results to be announced at the Annual Meeting in Montréal, June 2-6, 1992.

The positions up for election are:

Vice- president
Secretary
Chair Automation/GIS Special Interest Group
Chair History of Cartography Special Interest Group
Chair Map Design/Use Special Interest Group

Members with suggestions for nominees are invited to contact:

Chair of Nominating Committee
Claudette LeBlanc, c/o LRIS
P.O. Box 310, Amherst, Nova Scotia
CANADA B4H 3Z5
Tel: (902) 667-7231 (bus.)
(902) 667-3087 (res.)
Fax: (902) 667-6008

The membership profile of the executive is an important factor in determining the quality of the organization. Please, think about the CCA; what you want it to be, and what kind of energy you want serving your interests. Then consider your friends and colleagues and which of them might be a good candidate. Talk to them, seek their permission, and nominate them for the executive. All members of the executive are willing to discuss their roles and what is involved in them. Don't just think about it. Do it! The future of the CCA is determined by the nomination process.

NORMAN L. NICHOLSON MEMORIAL SCHOLARSHIP IN CARTOGRAPHY

Dear CCA Member:

In an effort to recognize and encourage exceptional student achievement and ability in the field of cartography, the Canadian Cartographic Association has established the Norman L. Nicholson Memorial Scholarship in Cartography. The scholarship is awarded annually. The CCA needs your financial assistance to maintain the Nicholson Scholarship so please consider making a contribution to the fund. Your assistance will be greatly appreciated.

YES, I would like to contribute $ _____ to the Norman L. Nicholson Memorial Scholarship in Cartography. The amount is enclosed. (Please return a photocopy of this form with your donation.)

Name: _____

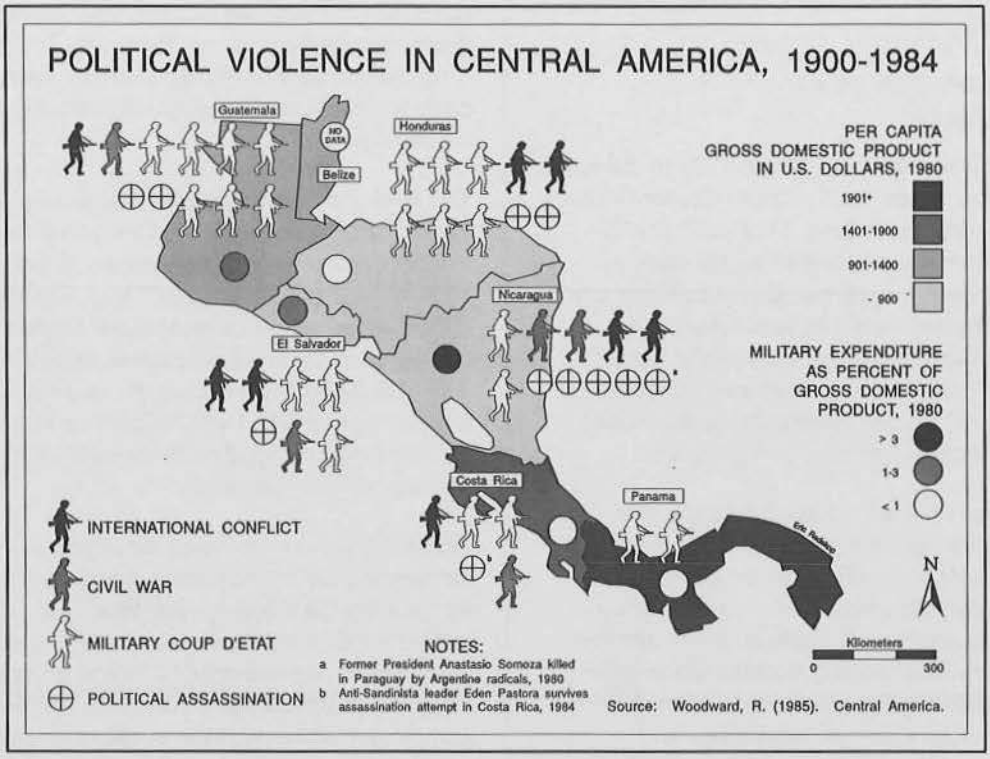
Address _____

_____

_____

_____

Thank you for your contribution.



President's Prize Winner: Eric Redekop took top honours in the Journalistic Category of the 1991 President's prize competition, judged at Brock University during the AGM. Time Magazine, through Paul Pugliese, generously gave 300.00 $US towards this award. *(50% reduction of original)*

AGM REPORT

REFLECTIONS ON CCA '91 AT BROCK UNIVERSITY

It's not often that the weather holds the key to the success of a CCA conference (held jointly with the OICC cartotechniques), but that's how it was at Brock this year. The sun shone, the sky was blue, the campus looked its lovely best, and above all it didn't rain. Had it rained, the delegates would have needed their umbrellas — indoors! — the consequence of work-in-progress to fix a long-standing leaky roof problem. As it was, the rain held off, the university remained dry and everything went swimmingly (so to speak).

Of course, it wasn't just a CCA conference, and it wasn't just at Brock. For this year's meeting was the result of a unique double collaboration, between the CCA and the Ontario Institute of Chartered Cartographers on the one hand, and between Brock and the State University of New York at Buffalo on the other. The OICC and SUNY did more than just help out, for the OICC contributed a slew of workshops and demonstrations (as Cartotechniques 10) and SUNY contributed a whole day--the final day of the conference.

The first three days, though, were at Brock. Events kicked off on the Friday with executive meetings, a special semiology session, the setup and opening of exhibits, and an Icebeaker Reception courtesy of Brock. The reception was held in Alphie's Trough, a former student pub nestled alongside a micro- Niagara Falls halfway down the Niagara Escarpment. This was the last event held in Alphie's prior to its controversial (over the collective dead body of Brock alumni) conversion to a faculty club.

If the reception was a 'last', the opening session the following morning was a 'first', the first event held in a brand new amphitheatre approved for occupancy only hours before the conference began. Following welcomes by the Vice-President of Brock and others, the keynote address was delivered by Michael Dobson, President of Creative Services with Rand-McNally, who spoke of the computer-related changes that have turned cartography upside-down in the last five years. Responses were provided by Chris Board of the London School of Economics and Neil Anderson of the Canadian Hydrographic Service.

For the rest of Saturday and Sunday delegates always had a choice of what to attend--a paper session and two workshops/demonstrations. The paper sessions covered a wide range of topics, and included two Mapping sessions, one specializing in atlas cartography, a GIS session emphasizing IDRISI applications, and sessions on Semiology and Cognition, Education and Training, and Data Issues. Papers by Paul Pugliese of TIME Magazine and Phillip Dodds of Intergraph about cartographic aspects of the Gulf War attracted particular interest.

The workshops and demonstrations were equally varied, and included Henry Castner on cartographic symbols and colour in cartography, David Douglas on XYNIMAP, David Flack and Glenn Holder on the SPANS Curriculum Development Toolkit, Bob Medaglia on the Electronic Atlas, Steve Prashker on ZAPPER, Mark Cranford on the municipal applications of Hunter GIS, David Horler on HI- VIEW digital elevation modelling, Eric Storie on RESORS and Janet Mersey on Atlas Graphics.

The coffee breaks provided the opportunity, not only for meeting old friends and general chit-chat, but also for viewing the extensive exhibits. There were over 30 exhibitors all told, drawn from colleges, universities, government departments, GIS vendors, commercial mapping companies and others. One of the most gratifying features was the excellent response of CCA members to an earlier invitation to display their own cartographic work. There was also a large number of high quality entries for the various student competitions.

The days were full, but delegates did not allow the serious side of the conference to detract from social activities. On Saturday night they were conveyed in two banana buses to Niagara Falls. One bus, containing the impatient ones, went direct; the other took a more circuitous route via the old and new Welland Canals, Niagara-on-the-Lake and the fruitlands. On Sunday night the CCA/OICC banquet took place at Brock, possibly the first banquet ever to have surveying instruments as table settings. The guest speaker was William Hamilton Merritt, sometime surveyor and prime mover of the First Welland Canal. Dead some 130 years, he was resurrected specially for the occasion.

On Monday the conference migrated across the Niagara River to SUNY Buffalo for a full day of activities. The morning was devoted to demonstrations in the Geographic Information and Analysis Laboratory jointly run by the Department of Geography and the National Center for Geographic Information and Analysis, and in the afternoon there were two paper sessions, one on GIS, the other on NCGIA research. Most important of all, everyone brought proper documentation, and there were no holdups at the border!

Conference organizer Alun Hughes allowed that he was delighted with the conference, which was attended by over 130 delegates. Switching to the first person (for it can now be revealed that said AH is the author of this little piece), let me say that it was a special pleasure to welcome so many colleagues and friends to Brock. Though it was an immense amount of work, it was also a rare privilege and a totally rewarding experience, and I and my fellow organizers would like to thank you for attending and contributing to the success of the weekend. See you again in Montreal next year!

GIS COLLOQUIUM 1991 - A REPORT

Red River Community College.

The fourth annual regional conference on geographic information systems was held in Winnipeg on May 2 1991 at Red River Community College. The conference, entitled "GIS Colloquium 1991", was sponsored by the Canadian Cartographic Association, the Canadian Institute of Surveying and Mapping (CISM), the Department of Geography of the University of Manitoba, and Red River Community College.

Over 90 people registered for the one day event which focused on the applications of GIS and included paper sessions, GIS demonstrations, and a panel discussion. Presented papers focused on such diverse topics as siting a hazardous waste facility, the use of GIS in agriculture, and the application of geographic information systems in the realm of surveying.

The guest speakers for the Colloquium were Dr. S. Masry of Universal Systems Ltd., Fredericton, New Brunswick, Dr. Y. C. Lee of the University of New Brunswick and Mr. Roger Wheate of the Geography Department, University of Calgary. Mr. Wheate is also the manager of the Canadian Cartographic Association.

The exhibition area of the conference was the focus of the afternoon session featuring demonstrations of the CARIS and MAP II geographic information systems, as well as displays and demonstrations by the Surveys and Mapping Branch of the Manitoba government, Alpha Information Systems of Winnipeg, and Manitoba Hydro.

Despite the poor economic climate in Manitoba this conference continues to be popular and plans are already being made for the GIS Colloquium of 1992.

Malcolm Brown
Marcia Faurer

GIS - Slithering, walking, or galloping to analysis?

University of Victoria.

This one day convention sponsored jointly by PICS (the Pacific Institute of Cartographers Society) and the BC Chapter of the URISA (Urban and Regional Information Systems Association) at the University of Victoria, May 23, 1991 was attended by 75 delegates. A panel of speakers were asked to address the subject of analysis using GIS. The session presented case studies demonstrating various combinations of GIS and other technologies to enhance analysis.

Gary Borstad (Borstad and Associates, Sidney BC) introduced and explained his Compact Airborne Spectral Imager (CASI) system. David Moon (Agriculture Canada) introduced concepts of analysis and database integration using as an example the Land Analysis and Decision Support system (LANDS), developed with support from CIDA and the Malaysian Ministry of Agriculture. LANDS allows for prediction of economic, social and environmental impacts of land- use decisions. Advances in date display techniques, notably the Digital Terrain Model, were outlined by Olaf Niemann (University of Victoria). A project taking and evaluating inventory of Pacific Northwest old-growth timber using remote-sensed data, undertaken for the U.S. Forest Service, was introduced by Cass Green (Pacific Meridan Resources). Catherine Berris (Berris and Associates) talked about her environmental assessment work for regional and municipal governments, illustrating her discussion with CAD and GIS examples where development scenarios were simulated into landscape. Nick Chrisman (University of Washington) expressed concerns about GIS users "slithering" toward analysis unaware and unconcerned about data error. Sharon Chow (Sierra Club of Western Canada) pointed out that an increasingly-aware public is anticipating the analytical power of GIS "to develop land-use options".

The second joint annual convention of PICS/URISA also saw Mark Sondheim of the B.C. Ministry of Crown Lands returned for a second year as PICS president, with Keith Lee of Sierra Systems Consultants Inc. becoming URISA president.

Bruce Whyte
C. Peter Keller

Short conference reviews related to CCA activities are welcomed from all CCA members. See back page for contribution information. *Editor*

NEW MEMBERSHIP CATEGORY ANNOUNCEMENT

ASSOCIATE MEMBER

At its 1991 Annual General Meeting, the Canadian Cartographic Association approved a new membership category of "ASSOCIATE MEMBER". Individuals who are members in good standing of a Canadian regional cartographic association, or a member in good standing of a national association with an interest in cartography or ancillary field qualify for this membership.

As an associate member, individuals will:

Receive a subscription to "*CARTOUCHE*", the Canadian Cartographic Association's newsletter.

Receive all other official notices mailed by the Canadian Cartographic Association.

Qualify for membership discounts when purchasing our association's products (including materials from our software library, slide sets, ...).

Qualify for membership discounts when attending our association's annual meeting, regional workshops and seminars.

In order to ensure unique full membership priveleges to our present members, asssociate members unfortunately will not receive a subscription to "*CARTOGRAPHICA*", our associations endorsed, learned journal, will not have voting rights, may not hold office, and may not nominate candidates for office.

The annual membership fee will be $35.00. Those applying for membership in 1991 will receive associate member status for the remainder of 1991 and for 1992.

To apply for associate membership please contact:

Roger Wheate, Manager CCA,
Department of Geography,
University of Calgary,
Calgary, Alberta, Canada,
T2N 1N4.

Phone: (403) 220-4892
E-Mail: Wheate@Uncamult.bitnet
Fax: (403) 282-8606

CCA members are urged to communicate details of this new membership category to colleagues who might be interested in the CCA, but not wish to participate in all asects of the association.

ANNONCE D'UNE NOUVELLE CATÉGORIE D'ADHÉSION

MEMBRE ASSOCIÉ

Lors de sa réunion générale annuelle de 1991, l'-Association canadienne de cartographie a apprové une nouvelle catégorie d'adhésion, soit "MEMBRE ASSOCIÉ". Les individus qui sont membres en bonne et due forme d'une association cartographique régionale du Canada, ou un membre en bonne et due forme d'une association canadienne ayant intérêt dans la cartographie ou dans un champ connexe auront automatiquement droit à cette forme d'adhesion.

En tant que membre associé, les inividus:

Recevront un abonnment à "*CARTOUCHE*", le bulletin de l'Association canadienne de cartographie.

Recevront tuos les avis officiels postés par l'-Association canadienne de cartographie.

Auront accès aux réductions réservées aux membres pour se procurer les produits de l'association (comprenant des articles provenent de la bibliothèque de logiciels, jeux de diapositives,...).

Auront accès aux réductions réservées aux membres pour assister à la réunion annuelle de l'association, ainsi qu'aux ateliers régionaux et aux séminaires.

Afin d'assurer à nos membres actuels les privilèges liées à l'adhesion régulière, les membres associés ne recevront malheureusement pas d'abonnement à la revue savante "*CARTOGRAPHICA*" parainnée par notre association, n'auront pas le droit de vote, ne pourront pas siéger ni proposer des candidatures à l'exécutif.

Les coûts annuels d'ahesion seront de 35,00$. Les personnes qui s'inscriront en 1991 recevront le statut de membre associé pour le reste de l'année 1991 et pour 1992.

Pour devenir membre associé, veuillez prendre contact avec:

Roger Wheate, Administrateur de l'ACC
Département de Géographie
Université de Calgary
Calgary, AB, Canada
T2N 1N4

Tél: (403) 220-4892
E-Mail: Wheate@Uncamult.bitnet
Télec: (403) 282-8606

Postcards from the edge*:

At Right:

Our Hosts and conference organizers, Jane and Alun Hughes

Thanks again!

I'm just thankful that this B&W reduction doesn't show the detail of his tie! — Editor

You can smile Dear, that's the last of them off to Toronto!

This must be what they mean by "safe sightseeing"!

At Left:
CCA Members take in the sights of Niagara Falls.

(*L to R*)
Bob Churchill, Gord Shields, Amanda Tate, James Toledano, Marcia Faurer, David Horler, David Douglas, Lee Thomson

At Right:
Six sad souls who missed the bus back to Brock after a night in Niagara Falls.

(*L to R*)
Names omitted to protect the guilty!

"David, I thought you had the map showing where to meet!"

Of the Niagara Gorge, that is.
A selction of pictures from the 1991 Annual meetings at Brock University.

ARE YOU (AND YOUR MAPS) READY FOR DESKTOP SCANNING?

Joseph M. Piwowar
Earth Observations Lab
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INTRODUCTION

Scan digitizing, or simply "scanning", is becoming an increasingly popular alternative to manual digitizing because of its increased throughput potential. This potential lies in scanning's "perceived" ability to totally automate the digitizing process: to simply feed a map into one end and get a topologically complete spatial database at the other end.

The scanning process can be broken down into two stages: data capture and feature extraction. Data capture is concerned with the hardware involved in the actual scanning process. The result of the data capture stage is a digital "picture", or image, of the input map. Images of maps cannot generally be used in any meaningful way because the data in the map images have yet to be converted to useful information. For example, an image of a topographic map does not yield a digital elevation model - this must be extracted.

The second stage of the scanning process, therefore, is feature extraction. Using specialized software, map features are identified in the scanned image and saved in a compatible form for further analysis. Since each map type is unique in many ways, it is difficult to develop a generic feature extraction program. This is the focus of much of the research and development in this field.

I refer to the combination of data capture hardware and feature extraction software as a scanning "system". My discussion here is targeted towards users of mid-range desktop computer systems with limited resources. I also assume that these users would prefer to acquire the scanning technology instead of contracting it out to service bureaus who can afford high-end scanners. I am concerned with the process of making information available from traditional maps for inclusion in digital analysis, not the eventual use of these data. I highlight the issues which may inhibit scanning as a viable alternative to manual digitizing.

SCANNING ISSUES

The issues arising from an evaluation of scanning technology can be divided into those relating to scanning hardware (costs and physical limitations) and feature extraction software (custom vs. stock programs, automation, and accuracy issues). These topics are detailed below.

Can You Afford to Buy a Scanner?

The price/performance ratio for scanning can be expected to drop as scanners become more popular. The principal factors affecting scanner prices are whether they can capture colours or only grey tones, their resolution, and the size of their scan area. A desktop scanner which might be most appropriate for map digitizing purposes would have as large a scan area as possible and be able to capture an image at a variety of colours and resolutions up to 300 dpi (dots-per-inch). This type of unit typically costs about the same as a similarly sized digitizing table but the feature extraction software can be considerably more expensive than data capture programs for digitizers. Digitizing tables, on the other hand, represent a mature technology without many new innovations or price fluctuations.

How Big Are Your Maps?

The difficulty encountered most often with desktop scanners are their limitations in size. The largest ones commonly available are only capable of handling documents measuring up to 14" x 17" while many map sheets are over twice these dimensions. Users of desktop scanners are left with the choice of either reducing the size of the original document (mechanically or photographically) or scanning the map in sections and "mosaicking" them back together with software. In the first case, there may be some loss of detail in the map which may be compensated for (in some simple cases) by increasing the scan

resolution, if possible. Care must also be taken not to introduce any geometric distortions during the reduction process. Image mosaicking can be effective but it requires that the system have the necessary software and large memory resources, which is often its limiting factor. In either case, the overall efficiency of the scanning procedure is reduced because this extra step is required. There are new desktop scanners appearing on the market which can accommodate larger documents all in one pass, but ...

Is Your Computer Capable of Handling a Scanned Image?

The amount of memory required to store and analyze a scanned map is also an important consideration. The values listed in the last column of Table 1 give an indication of the amount of display memory which must be available on a computer system to process a scanned map. Even though the final digital map you create during your analyses may be considerably smaller than the scanned image, the system must be able to handle the intermediate form.

Document Size	Scan Resolution	Image Size	Storage Format	Memory Required
8.5" x 11"	100 dpi	850 x 1100	1 bit	0.1 Mb
8.5" x 11"	200 dpi	1700 x 2200	1 bit	0.4 Mb
8.5" x 11"	300 dpi	2550 x 3300	1 bit	1.0 Mb
8.5" x 11"	100 dpi	850 x 1100	8 bits	0.9 Mb
8.5" x 11"	200 dpi	1700 x 2200	8 bits	3.6 Mb
8.5" x 11"	300 dpi	2550 x 3300	8 bits	8.0 Mb
24" x 36"	100 dpi	2400 x 3600	1 bit	1.0 Mb
24" x 36"	200 dpi	4800 x 7200	1 bit	4.1 Mb
24" x 36"	300 dpi	7200 x 10800	1 bit	9.3 Mb
24" x 36"	100 dpi	2400 x 3600	8 bits	8.2 Mb
24" x 36"	200 dpi	4800 x 7200	8 bits	33 Mb
24" x 36"	300 dpi	7200 x 10800	8 bits	74 Mb

Table 1: Storage Requirements for Scanned Images.

The number of bits of memory used for each pixel in the scanned image - listed as Storage Format in Table 1 - depends on the type of map that is being scanned, the capabilities of the scanner and feature extraction software, and how the final digital map will be used. The simplest type of map contains only black lines of equal weight and no shading or colour patterns. The system need only be able to determine the presence or absence of a line in this case, so 1 bit of storage is all that is required for each pixel. This type of "bitmap" may be appropriate for imaging contours from a topographic map (if they can be uniquely distinguished from the other map features), however, 8 bits of storage are typically required for thematic maps where distinct regions are identified by different grey tones or colours. Some scanning systems can collect and manipulate 4-bit data, but the resulting files may not be compatible with standard map analysis packages.

What Level of Scanner Resolution Do You Require?

An appropriate scan resolution is one in which all of the critical map features are captured, but not over-represented, in the scanned image. This is most often determined through trial and error. For example, linear features from the map (e.g. contours and/or class boundaries) should appear in the image as continuous strings of pixels, one or two cells in width. If the scan resolution is too low, gaps will appear in the image representation; if it is too high, fine details may not be distinguishable. Another way of examining this issue is to determine the "resolution" of the type of map features that are of interest. It is pointless to scan a document at a higher resolution than it is portrayed cartographically. For example, the line-width used to portray a paved road on a Canadian 1:50,000 scale topographic map is 0.02 in. which can be easily captured at a scan resolution of 100 dpi. Due to limits in standard cartographic drawing, scan resolutions of more than 300 dpi. are seldom warranted.

Can Existing Feature Extraction Software Handle Your Maps?

Once you have your map data "in" (a scanned image) getting information "out" is a very difficult task. Unfortunately, even if you can use "tailor made" feature extraction software, considerable operator intervention is still required during this process. This is because there are many confusing features on maps which make the information difficult to extract automat-

ically. For example, a contour label along an otherwise continuous contour line or multiple overlapping features on thematic maps are difficult to resolve digitally. Every map type is unique and software which was designed to work on one type will probably not recognize features on another.

Current scanning software designers are attempting to lessen this operator dependence by building a wider range of cartographic symbol interpretation features into their products. For example, some systems are now capable of extracting information from scanned maps by grouping features according to line thickness, object size, and feature colour. Of course, these programs assume that the features you are interested in capturing have distinctive line thicknesses, object sizes, or feature colours. Generic feature extraction programs are not yet available - and won't be for some time - so if a stock program capable of extracting the desired features does not exist, one will have to be developed.

Should You Develop Custom Feature Extraction Software?

One advantage of manual digitizing is that data capture programs are readily available. These programs are adaptable to a wide variety of map types since the user selects which features are to be digitized. Scanning often requires the development of sophisticated software, however, to recognize certain features and ignore others. Although the initial expense of software development is high, this may still be a cost-effective solution for large digitizing projects where reductions in labour charges associated with substantial increases in throughput with scan digitizing can be realized once the software is in place.

How Can You Help The Feature Extraction Process?

Since feature extraction programs can only recognize a limited number of configurations of map features, the best way to facilitate automation is to simplify the map before scanning, i.e. re-draft it onto simplified theme separates. Although re-drafting allows for any changes or updates to be made to the map's content, this is often an unacceptable solution since your maps may reflect "snapshots" of spatial phenomena at a fixed time (hence they do not need to be updated), and the re-drafting of maps to simply show the features of interest would require at least as much extra time and cost as manual digitizing.

The feature extraction abilities of a particular system could be improved, in some cases, by pre-processing the scanned image to reduce spurious "noise" (artifacts of the scanning process) and to thin each line in the scanned image to a single pixel width which makes digital processing of that feature easier. These functions are commonly found in packaged scanning systems.

What About Accuracy?

Anyone who has ever digitized a map manually knows how tedious and error-prone line following can be. (Herein lies one of the lures of scanning!) The accuracy of line following is much greater when automated since a computer can follow a (distinct) line more consistently than a human digitizer. On the other side of the accuracy issue, however, errors in the original map sheet frequently pass unnoticed in the scanning approach, whereas they may be discovered - and corrected - during manual digitizing.

SUMMARY AND CONCLUSIONS

The first consideration which should be made when evaluating scanning technology for a given application is the complexity of the maps which are to be digitized. If the desired features are unambiguously portrayed - that is, unique with respect to style, tone or colour, and not in conflict with any other map symbol - then scan digitizing may be possible. Unfortunately, there aren't many maps which fit this simplistic description.

The second step in a scanning evaluation is to locate any available feature extraction programs which match your map type. If the search is successful, bear in mind that no program is totally automated - a considerable amount of operator editing will still be required to clean up the digital map information. Users who cannot locate an available program frequently revert back to manual digitizing to avoid the expense of developing new conversion software.

If both of these criteria are met, then the other considerations listed above, such as scanner resolution and accuracy, should be evaluated. In some situations potential problems, such as a lack of computer memory, can be resolved with a modest capital expenditure. In others, such as the size of the source map, an acceptable solution may not be found.

Scanning is a technology whose time has - almost - come. Although the research and development community is rapidly making more sophisticated feature extraction programs available, we are still several years away from having generic, fully automatic scan digitizing systems commonly available.

Corporate news

IDRISI Version 4.0 Release due in Late Fall 1991

The new IDRISI, version 4.0, has just finished development and is in testing preparatory to release in late fall this year. Several changes have been made to the programs, including the addition of command line processing to many modules, changes to make use of a math co-processor and fundamental changes to the data file structures to incorporate true geo-referencing.

The new release supports a math coprocessor to speed all analytical functions. With the addition of math coprocessor support, IDRISI is much faster than before, and should be one of the fastest systems available. The addition of command line processing makes possible iterative model building, testing and assessment, in batch files or formalized as meta-programs.

The most fundamental change comes in the changes in the documentation files to support geo-referencing. New image documentation files specify the real world corner points of the image, and the reference system in use. This allows for simpler image mosaicing, more flexible vector overlay on image files and better control of rubbersheet functions.

In response to the acquisition of ROOTS by Decision Images Inc., and the subsequent lack of easy to use, low cost digitizing, we have been developing a set of programs to deal with IDRISI vector files. New programs in the works include a new digitizing routine with the image displayed as it is digitized, vector editing capabilities and topological encoding for vector files, with a separate program for cycling polygons.

Look for release of IDRISI version 4.0 in late October 1991. Current users will be notified via the IDRISI newsletter of update availability and pricing.

Help!...

Over a year ago I read in ArcNews, the ArcInfo newsletter about an independent software vendor that was developing a program to convert ArcInfo files into a PostScript compatible format. I would appreciate any news about such a program. Please contact
Roy Doyon,
Dept. of Geology & Geography,
University of Massachusetts, Amherst, MA 01003;
email (Internet): doyon@geolgeog.umass.edu

Thank you.

Scandinavian Geological Organizations Select Intergraph Systems for Mapping

Intergraph is pleased to announce that the Swedish Geological Survey, (SGU Uppsala, Sweden) and Geological Survey of Norway, NGU (Trondheim, Norway) have awarded the company contracts for supplying automated mapping and map ublishing systems.

SGU's Marine Geology department is responsible for surveying and mapping ocean-bottom geological information, important for energy exploration and environmental studies. Currently, survey data collection and map production for an area measuring 965 square miles takes three years. SGU anticipates reducing this production cycle to one year with Intergraph's system and subsystems supplied by other vendors.

This production cycle is divided into two parts. From April to October, survey data is collected with the computer system on board a survey ship. From November to March, the system is installed in SGU's main office for conducting further geological analysis using MGE programs. For seismic data presentation, Intergraph's MGE Map finisher and MGE Map Publisher software will be used to compile maps, generate legends and create "what-you- see-is- what-you-get" (WYSIWYG) displays. The software will then generate colour-separated, screened, composited films. SGU will also use Intergraph's electronic publishing software, DP/Publisher, to produce technical publications.

The Geologic Survey of Norway

Geologic mapping will soon be modernized by another Scandinavian organization, the Geological Survey of Norway (NGU), where geological maps are currently produced using traditional manual colour separation techniques. After examining several system alternatives, NGU selected Intergraph's map publishing system, including a RISC-based UNIX workstation and map publishing software.

As the system expands, geologists at NGU will compile manuscripts on workstations instead of digitizing tables. Data will then be sent to cartographers for symbolization, type placement and colour separation. With this workflow, NGU expects to increase productivity by reducing the number of steps in the process and decrease production costs by minimizing the number of film separates required.

corporate news (continued)...

Producing NGU maps is especially challenging due to complex, high-quality lithographic specifications. NGU uses a large number of multicoloured geologic area patterns and line screens to achieve the unique design of their map products. NGU cartographers have designed their geologic map series around a six-colour printing process instead of the more common four colour (cyan, yellow, magenta, black) process, using as many as 85 feature types on a single map to represent geologic phenomena.

Intergraph and NGU collaborated to develop special line screening techniques to enable cartographers to use line screen tints as an alternative to the more commonly used dot screen tints, in the automated colour separation and screening process.

MAP POSTER AVAILABLE

The geologic map produced in cooperation with NGU and Intergraph has been printed as a large colour poster to illustrate digital map publishing techniques. If you wish to obtain a copy of this poster or for more information, please contact:

Katherine Mak
Intergraph Canada Ltd.
3115 - 12th Street, N.E.
Calgary, Alberta T2E 7J2

Notes/memos

Host needed for visiting Cartographer

Graham Allsop is the Chief Cartographer in the University of Sheffield's Geography Department. His department has been using Mac's for desktop mapping for over two years, and he is available for a short study leave to study computerized cartography (particularly the use of desktop computers) within North America.

Seeking to stay for about 5 weeks, obstensibly in Autumn 1992 or Spring 1993, he is flexible about location and timing. He is willing to provide lectures about UK experiences in educational cartography, and the use of desktop systems in lab settings, together with practical demonstrations.

Anyone who might be able to help is asked to contact Graham at the Cartographic Unit, University of Sheffield, Sheffield S10 2TN, UK. Fax:(0742) 722199

Calender/calendrier

91:10:16-17
Geomatics Atlantic '91
Halifax, Nova Scotia
Info: Stephen Wallace
P.O. Box 591, Bedford NS
Tel: (902) 835-7691
Fax: (902) 835-1645

91:10:23
Information Exchange on LIS/GIS in Alberta
Edmonton, Alberta
Info: Janis Simanovkis
Tel: (403) 427-6279

91:11:12-14
8th Int'l Methodology Symposium '91
Spatial Issues in Statistics
Ottawa, Ontario
Info: Liane Chatterton
Jean Talon Bldg., Floor 3 Ottawa, ON K1A 0T6
Tel: (613) 951-4311
Fax: (613) 951-0569

91:11:14-15
Geomatics III/Géomatique III
Montréal, PQ
Info: Lise Labelle
Tél: (514) 369-5000
Télec: (514) 369-5059

92:02:09-14
GIS '92 (6th. Annual Symposium)
Vancouver, BC
Info: Symposium Office
720-845 Cambie Street
Vancouver, BC V6B 4Z9
Tel: (604) 688-0188
Fax: (604) 688-1573

92:05:04-07
1992 MidAmerica GIS Symposium
Kansas City, Missouri
Info: K. Kappelman
University of Kansas
1246 Mississippi Street
Lawrence, KS 66045-2607
Tel: (913) 864-3284
Fax: (913) 864-3952

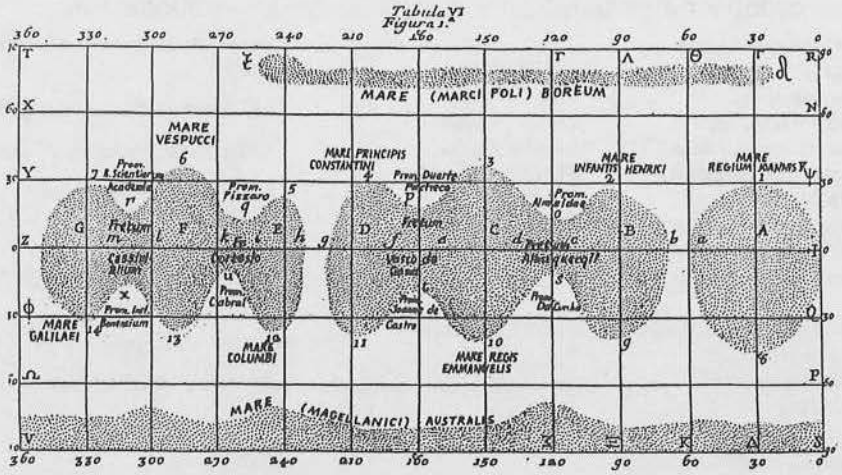
92:08:03-07
International Symposium on Spatial Data Handling

Charleston, South Carolina
Info: David J. Cowan
Univeristy of South Carolina
Columbia, SC 29208
Tel: (803) 777-6803
E-mail: Cowen@Otis.HSS.SCarolina.EDU

"MAPPING THE PLANETS"

by P.J.Stooke and C.P.Keller

A new slide set, "Mapping the Planets", is now available from the CCA. In 40 slides and an explanatory booklet it gives an overview of the history and current status of efforts to map the Moon and planets. The booklet contains background information on astronomy and space exploration and a set of captions for the slides. The emphasis is on relatively recent cartographic work, undertaken in support of the solar system exploration programmes of the United States and the Soviet Union. A few maps drawn before the space age are included to give historical perspective. Information on obtaining copies of the maps themselves is included. The set was prepared by Philip Stooke of the University of Western Ontario and Peter Keller of the University of Victoria. Price: $50.00 (including postage and handling)



BIANCHINIS VENUSNOMENKLATUR
(F. Bianchini, Hesperi et Phosphori nova phaenomena, Rom 1728)

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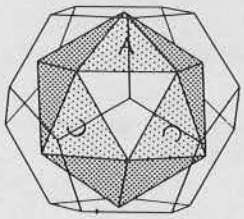

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Bumper sticker
In blue lettering, Price $3 each, 2 for $5, 5 for $10.

Order both above items ("Mapping the Planets" and bumper sticker) from:
Roger Wheate (CCA/ACC),
Geography Department,
University of Calgary
Calgary, Alberta T2N 1N4

CARTOGRAPHICA BACK ISSUES

Janet Mersey has "saved" a number of back issues of Cartographica and the Canadian Cartographer.

These are available throught the manager's office (address at left) for $6.00 single issue/$12.00 double issue. Add $2.00 per issue postage. Full listing of all issues can be found in Cartouche, number 1.

EXPLORATIONS IN THE HISTORY OF CANADIAN MAPPING
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Aileen Desbarats, Université d'Ottawa
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Ottawa: Association des cartothèques et archives cartographiques canadiennes,
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Content Deadlines are: January 31, April 30, July 30, October 31.
Les dates limites pour l'envoi d'articles ou de documents sont les suivantes: 31 janvier, 30 avril, 30 juillet, 31 octobre.

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Acceptable Formats for content are:

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	ASCII text files in all PC or Mac diskette formats	
Also acceptable:	PC-DOS (Format 5.25/3.5")	Wordperfect (4.0-5.0), Multimate, Wordstar (3.0-5.5).
	Macintosh Format	MS-Word.
	Hard Copy:	Typewriter, Neat handwriting(!)
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Disks should be sent via mail (protect it!!!) or courier to Editor at S.S.F.C. (*address page* 2).

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